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These defects and others in the same line do not prevent the book being a handy one for the general reader. It is the duty of the scientific reviewer to point out its weaknesses, and the author cannot complain, for he is himself far from mild in his criticisms of others; for instance, Mr Horatio Hale is charged with "extravagant assumption," M. de Quatrefages with "reckless assumption," and so on. Its pages would have been greatly improved by the display of kinder feelings and stricter justice to students in the same line of research.

D. G. BRINTON.

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*Certain River Mounds of Duval County, Florida. Two Sand Mounds on Murphy Island, Florida. Certain Sand Mounds of the Ocklawaha River, Florida. By Clarence B. Moore. Philadelphia, 1895. (From Jour. Acad. Nat. Sci., Phila., Vol. X.)*

## I

This admirable paper by Mr Moore forms the third part of his study of the sand mounds of Florida and is fully equal in importance to those which precede it. The three together form the most satisfactory account of the archeology of our southern peninsula that has been published, and it is to be hoped that the author will continue the work so well begun.

It would be a pleasant task to review the paper named, but our object at present is to refer to some of the results of Mr Moore's explorations with special regard to the bearing they have on certain questions, aware, however, of the fact that this has been done in part by Mr Cushing in the April, 1895, number of the *Anthropologist*. Although we may not agree with Mr Moore in all his conclusions, there is no fault to find with his field work which has been done with scrupulous regard to accuracy and thoroughness, nor with the manner in which he has presented the results to the public, as nothing further in this respect could be desired.

The collections made present a strange medley of types difficult to account for. Some are apparently of local origin, but others bear a strong resemblance to types of different sections, and it is somewhat singular that the strongest leaning in this respect should be toward the types of the stone-grave district, especially of middle Tennessee.

The stone spades, of which Mr Moore discovered some three or four specimens, have hitherto been found, with few exceptions, in the stone-grave areas of middle Tennessee and Kentucky. Most of the pipes belong to the plain clay type, which appears from Jones' "Southern Indians" to have been in use among the mound-builders of Georgia. The same form of clay pipe was common among the stone-grave builders of middle Tennessee, the large stem-hole as well as the plain form being characteristic. The broad, flattened copper band with two longitudinal grooves found by Professor Putnam in a mound of Franklin county, Tennessee, is exactly paralleled by the specimen obtained by Mr Moore from the mound on Murphy island. The engraved shells found by him are considered by Mr Douglas, who is well informed on Florida archeology, as unique in the collections from that state; yet engraved shells somewhat similar have been discovered in the stone-grave sections of middle Tennessee and southern Illinois. The metal disks with embossed margin, several of which were discovered, are exactly imitated by the copper disk found in a stone grave of Tennessee and figured by Mr Thruston in his "Antiquities of Tennessee," who considers it post-Columbian. The modern-looking, pitcher-like lip on a few of the earthenware vessels is shown by Mr Thruston on two of the Tennessee vessels, and the double earthen lamps or cups are found in both sections.

This resemblance holds good in so many instances and in reference to some types so unusual, as to leave the impression that there was some relation between the peoples of the two sections. Possibly old Black Hoof's story of the former residence of Shawnees in Florida may be corroborated by mound testimony.

We observe throughout Mr Moore's papers repeated notices that the mounds contained no indications of contact with Europeans. In fact this idea appears to be, to some extent, a favorite one with him; but we must do him the justice to say that as a rule he appears to be freer from theoretic bias than most of us. However, there are some facts shown by his work which are difficult to account for if we accept this warning as decisive.

We notice that all the copper articles discovered appear to have been made of sheet copper, even to the cylindrical piercing implements. The author, speaking of the latter, says: "These piercing implements, of which the longest measured nineteen

inches, seemed, upon superficial examination, to be wrought of solid copper. A careful inspection, however, showed them to be made in at least two different ways—some from strips of thick sheet copper hammered over on itself and rounded by hammering; others of many thicknesses of copper in thin encircling sheets beaten into very close contact."

It would seem to be a useless expenditure of labor to hammer a lump of native copper into a thin sheet and then roll it up and hammer it into a solid implement. The spindle-shape copper articles found by the Bureau of Ethnology are, I believe, in all cases solid. It is true that copper beads made of sheet copper are not uncommon, and a few bracelets made of sheet copper also have been discovered; but the antiquity of the latter is yet a disputed point. This collection is probably the only one of any extent in which all the articles appear to be made of sheet copper.

There is no doubt that the particular forms given to the articles must be attributed to native workmanship. The point at issue is, Whence came the copper? And in what form was it received? John Hawkins, who touched the coasts of Florida in 1564-'65, says that when the French first arrived in that region gold and silver were obtained in considerable amount from the Indians, but the supply ere long gave out.

How they came by this golde and siluer the Frenchmen know not as yet, but by gesse, who hauing trauelled to the Southwest of the cape, hauing found the same dangerous, by meanes of sundry banks, as we also haue found the same: and there finding masts which were wracks of Spanyards comming from Mexico, iudged that they had gotten treasure by them. For it is most true that diuers wracks haue beene made of Spanyards, hauing much treasure: for the Frenchmen hauing trauelled to the capeward an hundred and fifty miles, did finde two Spanyards with the Floridians, which they brought afterward to their fort, where-of one was in a carauel comming from the Indies, which was cast away foureteene yeeres ago, & the other twelue yeeres; of whose fellowes some escaped, othersome were slain by the inhabitants. It seemeth they had estimation of their golde & siluer, for it is wrought flat and grauen, which they weare about their neckes; othersome round like a pancake, with a hole in the midst, to bolster vp their breasts withall.\*

Laudonniere asserts that it was obtained from the ships that were lost on the coast.†

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\* Hakluyt, III, p. 615.

† Ibid., 369.

Mr Moore says the copper ornaments do not present a uniform thickness; this, however, does not establish his point, as copper was not rolled at that early date, and the variation in thickness may be attributed in part to native manipulation in forming the desired articles. Chemical analysis of the mound copper is far from satisfactory, and until something more definite than what has been given by Mr Moore is presented will not weigh against other data. It is rather strange that the gold ornaments described and figured by him, which he supposes were derived from the Spaniards, should bear the same pattern and have the same designs or markings as some of the copper articles which he decides are pre-Columbian. Possibly the one may antedate the arrival of Columbus by a few years, while the other must be ascribed to a date a few years subsequent to the discovery, yet we must attribute them to the same people.

It is noticeable that several pieces of the earthenware figured seem to have been patterned after what we may term the white man's hat. See, for example, part 2, fig. 3, pl. 28; fig. 3, pl. 33; and part 3, fig. 2, pl. 75. One (fig. 3, pl. 33) bears a remarkable resemblance to the Spanish-American sombrero. Four-leg pots, some three or four of which are figured by Mr Moore, are very rare, and generally inspire some doubt in regard to their antiquity. Colonel Jones remarks in regard to the single one figured in his work, "In general outline [it] assimilates very closely to the small iron pot of the present day."

However, it is to such excellent work as Mr Moore is doing that we must look for the data by which to solve these problems.

CYRUS THOMAS.

## II

The two lines of investigation which are followed with regard to copper articles of aboriginal origin are:

- 1st. As to their age, whether of pre- or post-Columbian date.
- 2d. As to the sources of the metal itself.

The determination of the latter question will in many cases and in certain localities afford at least a plausible argument toward the settlement of the former, for if the article under consideration be made of copper containing certain foreign elements, or alloyed with tin or zinc, the probability, amounting almost to a certainty, exists that the metal is of European origin, whether of native manufacture or not, whereas if certain impurities be

absent and others present in very minute quantities it is almost certain that the metal comes from the native copper mines of Lake Superior, for if these foreign elements be present in approximately the same quantities as in copper from certain known localities it is at least probable that it was derived from these sources. This is the line of investigation which Mr Moore has followed with much acumen and in pursuing which he has had careful analyses made not only of some of the copper ornaments and implements from the Florida mounds, but of native copper from the several American sources from which it was possible that the copper of the aborigines may have been mined. Two of these analyses are of special interest as indicating that the mines of Cuba, whose outcrops were profitably worked even in our own day, yielded copper used by the natives of the Florida peninsula.

Of course, the proof of American origin of the metal does not establish the pre-Columbian age of the article, but it affords a presumption in favor of its manufacture before commerce with Europe supplied the coast tribes with copper and brass in such quantity that they used it, not only for domestic purposes, but for barter with interior tribes and when, therefore, in all probability the current of exchange for copper was from the east to the west, rather than from the west to the east. Mr Moore's memoir is especially notable, inasmuch as it pursues this precise and really scientific line of investigation—a line which Mr Cyrus Thomas in the Twelfth Annual Report of the Bureau of Ethnology points out to be desirable, but seems to have been unaware that Mr Moore had actually pursued, if we may judge by the following remark on copper articles of dubious antiquity: "A careful chemical and microscopical examination of the various specimens might possibly settle the point (of their pre- or post-Columbian age), though, as this has not been done, we must for the present rely upon inspection." JAMES DOUGLAS.

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KENTUCKY MOUND EXCAVATION.—Mr George Owens, of Barboursville, Kentucky, has recently opened some large mounds east of that town, finding therein two peace pipes, a war axe, a large number of stone and shell beads, together with numberless arrow flints. The bowls of the pipes are 4 inches high and about 5 inches in circumference, while the stems measure 9 inches in length. The pipes are reputed to bear picture-writings.